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STUDY OF A FEMALE HEAD
By W. Spatz
(Direct from crayon drawing)



BULLETIN AND RECORD

ART NEWS SECTION OF BRUSH AND PENCIL

VOL. XV.

MARCH, 1905

No. 3

THE ART INDUSTRIES OF AMERICA—I THE PHOTO-ENGRAVING OF PICTURES

The present article is the first of a series, which will run through many issues of BRUSH AND PENCIL, on the art industries of America—a series designed to inform the public in plain terms, without the technicalities which so often obscure discussions of this sort, how the manifold art products that are placed upon the market or offered to view are made. A few articles of this nature were printed in the magazine some five years ago, but the enterprise then projected was cut short, owing to circumstances that made its continuance impracticable at that time. The so-called fine arts constitute but a small percentage of the art that enters into our daily experience—pottery, bronzes, ornamental metal work, jewelry, rugs, carpets, wall-papers, tapestries, laces, a thousand and one things constantly before our eyes, should claim attention and excite the liveliest interest. How are they made? Where? By whom? Under what conditions? As a matter of fact, the cultured public does seek—and often in vain—for just this sort of detailed, plainly stated information, as is evidenced by the fact that the few articles formerly published in BRUSH AND PENCIL created a demand that soon exhausted the editions.

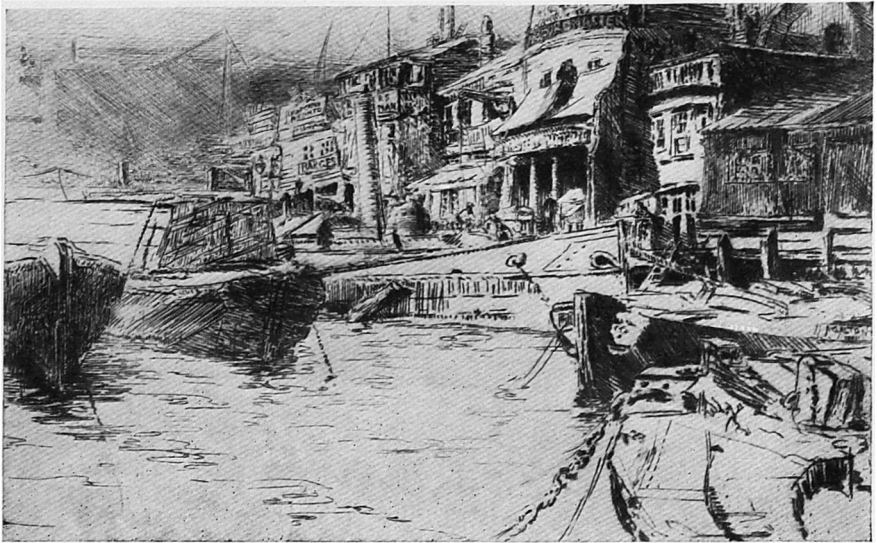
The series as resumed will be characterized by one feature that will doubtless recommend itself to the reader—the absence of gener-



DESIGN

By Mlle. Boulonnois

(Half-tone direct from fabric)



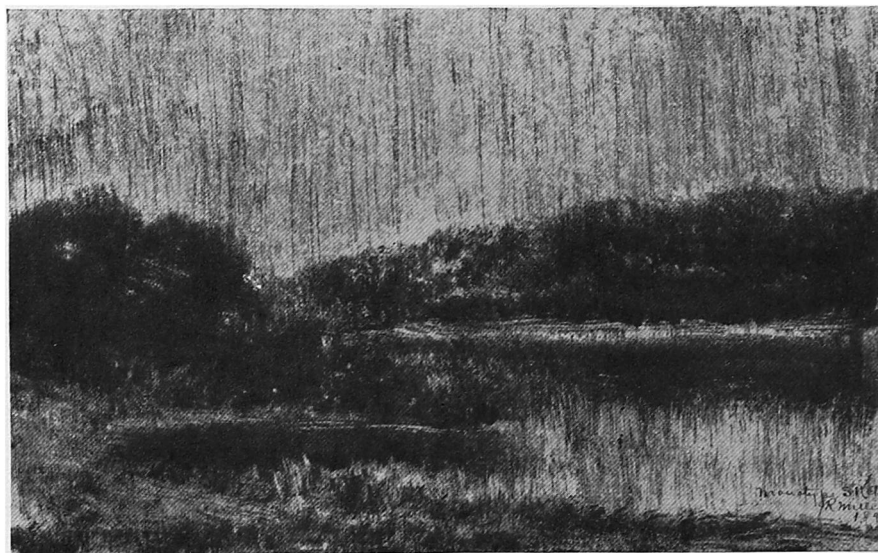
LINEHOUSE

By Ada Galton

(Half-tone direct from etching)

alities. To this end, the stories of the many art products considered will be linked with individual plants or establishments engaged in making the articles whose manufacture is described. The processes explained will thus gain in definiteness of statement and specific reference. In every case, thoroughly representative, well-equipped concerns, using the best methods, and known for the quality of their work will be chosen as the basis of the successive articles, which will be carefully worded, well-digested statements of fact, shorn of personal eulogy and even of personal mention, except so far as a clear elucidation of the subject may suggest as desirable. The establishment of the Osgood Company of Chicago, with whose artistic work as cut-makers the readers of *BRUSH AND PENCIL* are familiar, has been selected as the basis of the article on the photo-engraving of pictures. It should be said at the outset that the accompanying illustrations, which show the wide possibilities of the art of reproduction by photo-engraving, were made by that concern.

One of the most remarkable developments of late years is the photo-engraving process now generally employed for the reproduction of pictures such as are used in this magazine. Steel-engraving, the glory of a former generation, is to-day an art of the past, and wood-engraving has but few expert representatives. Photography and electrical science have opened up new possibilities, and purely mechanical means are now employed to accomplish what was formerly



RAIN AND SUNSHINE

By J. R. Miller

(Half-tone direct from monotype)

done by hand. The old methods were too slow, too expensive, and except in the case of the best artists, altogether too unsatisfactory.

To-day, with a minimum of hand labor, it is possible to reproduce anything from a pencil sketch to a photograph with absolute fidelity, and that in less time than it formerly took to make the rudest wood-cut. The results obtained easily place photo-mechanical engraving in the list of art industries. The various values of an oil-painting, the slightest hair-line of an etching, the sketchy stroke of a pen-drawing, high lights, shadows, medium tones, everything is caught with precision by the lens and recorded by chemical agency in such a way that within a few hours after an artist has finished a picture hundreds of thousands of duplicates, each of necessity absolutely true to the original, may be run off and furnished to the public. Such a wonder was undreamed of a comparatively few years ago.

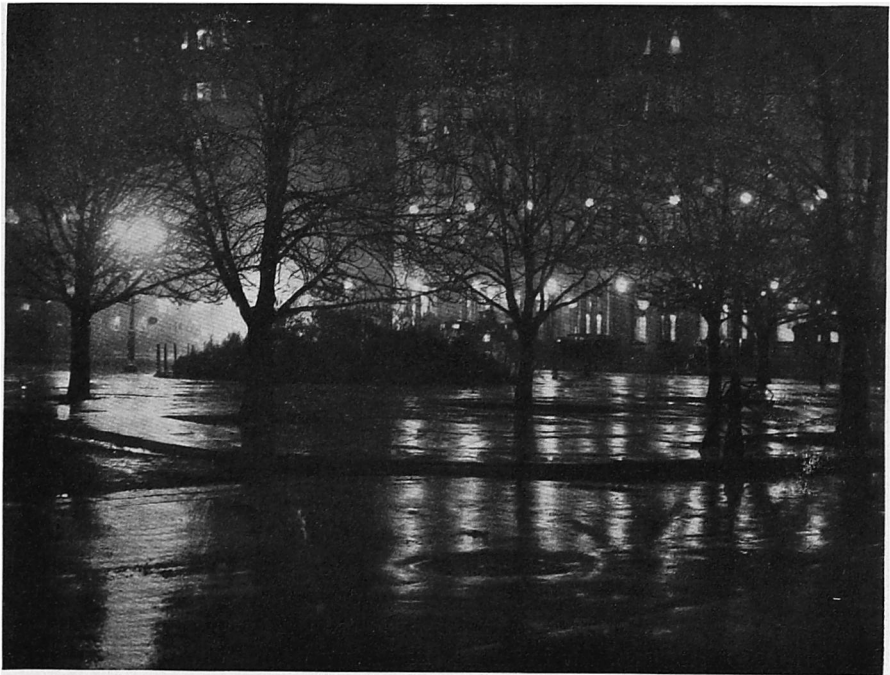
Journals have literally been transformed as regards their illustrative features, and the majority of readers, perhaps, who have watched this transformation are utterly ignorant of the means employed to effect the improvement. Zinc-etching and half-tone are to them magic words with which to conjure the beautiful, but few know by what means their spell works its results. How many readers of BRUSH AND PENCIL, for instance, have any idea of how the illustrations that appear in it from month to month are made?

The illustrations in this magazine are all photo-engraved, and the only two kinds of plates used are half-tones and zinc-etchings.

Photographs, wash drawings, crayon sketches, pen-and-ink drawings, photogravures, etchings, prints from old wood-cuts, and steel-engravings, almost anything may be used for copy, with admirable results, provided only the necessary manipulative skill is used in the making. What can be accomplished is shown by the Osgood Company's cuts given herewith.

Line compositions, in which the sharp stroke of pen or pencil forms a natural "tooth" for the plate in making the impression on paper, lend themselves easily to reproduction by the zinc-etching process, by which the drawing is photographed on sensitized zinc, and the remaining portions of the plate are afterward eaten away, so as to leave an exact fac-simile of the drawing. Photographs, photogravures, wash-drawings, and the like have no natural "tooth," and have to be treated by the half-tone process, which is the most notable triumph of the photo-engraver's art, and which is at the present time in universal use.

In principle, the half-tone is as simple as its results are excellent, and in describing the process I shall follow closely my own words formerly used in this magazine. If the finest engraving in BRUSH



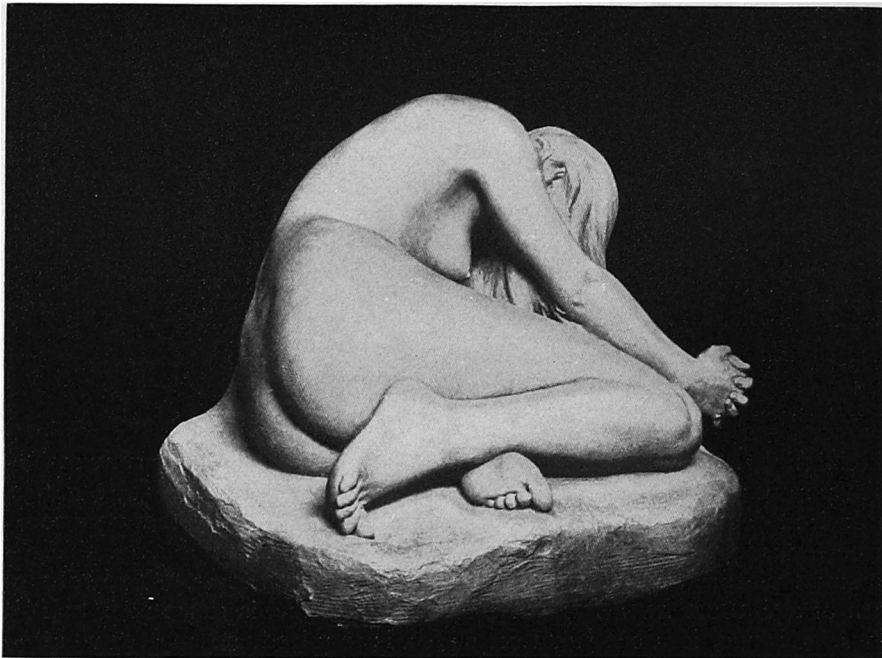
REFLECTIONS—NIGHT

By Alfred Stieglitz

(Half-tone from ordinary photograph)

AND PENCIL be examined under the microscope, it will be found to be essentially nothing but a mass of fine dots of different sizes, according to the lights and shadows of the picture. These dots are the artificial "tooth" supplied by the engraver to take the place of the clear-cut stroke of the pen or pencil in line-drawings, and it is the discovery of a means of supplying this artificial "tooth" that is responsible for the class of illustrations now almost universally used in books and magazines. A clear idea of how a half-tone plate is made, and an engraving with its delicate tracery, or a photograph with its almost imperceptible shadings, is transferred to the printed page, may best be gained by following a picture through the various stages of plate-making.

Suppose it is desired to reproduce a painting in BRUSH AND PENCIL. The painting is first photographed, care being taken to secure a good, clear print. The size of the photograph used is comparatively unimportant; it is more important that it be free from defects, since the slightest imperfection in the photograph will be duplicated with absolute precision in the print. Hence it is often necessary to "touch up" the original. For this retouching an artist familiar with the possibilities and limitations of the half-tone process



THE PENITENT—MARBLE

By R. Förster

(Half-tone from photograph of statuary)

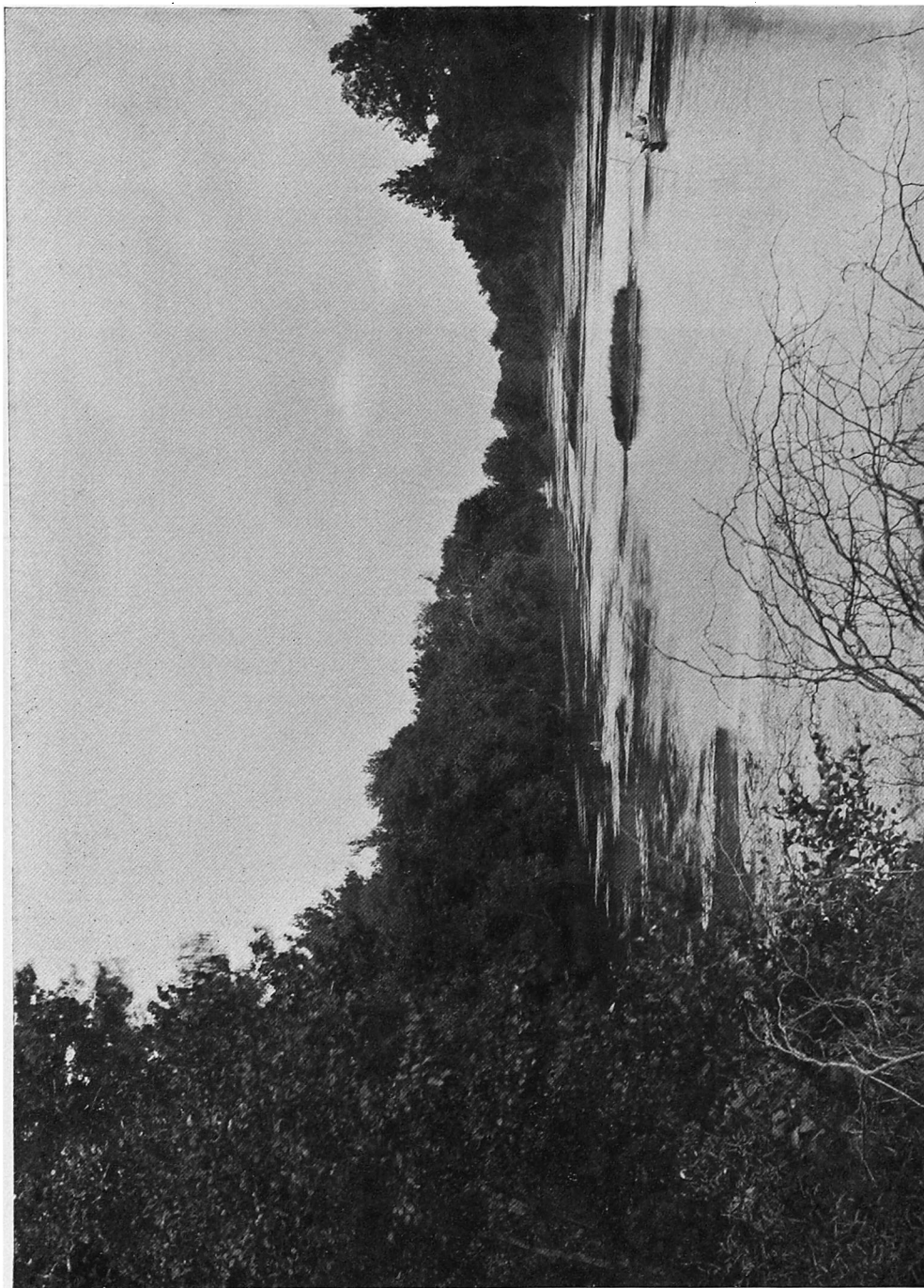
is employed. Often artistic treatment of the photograph greatly enhances the beauty of the plate, but such improvements, it must be remembered, are made at the sacrifice of faithfulness to the original. The working out of defects is essential, but the working in of improvements is a liberty few publishers would presume to take.

This copy, an ordinary dry-plate negative, being prepared, it is fastened to the copy-holder, which stands perpendicularly before the camera, and in such a position as to command excellent natural or



HOUSE IN THE CLEARING
By Carl Ahrens
(Half-tone, 200-line screen)

artificial light. The camera is mounted on a long bed, or runway, which permits of its being moved backward and forward so as to get the desired focus. By this simple device a picture three feet square can be rephotographed for a plate an inch square, or any desired size, or a small picture can be enlarged two or three diameters. The text width of a BRUSH AND PENCIL page, for instance, is four and a half inches. Hence, if a cut the text width is required, no matter what the size of the original may be, it is only necessary to move the camera on its bed until the image made in the box is four and a half inches in width. If it is desired to have a plate two and a quarter



THEME FOR A WATER-COLOR WHERE THE PENNSYLVANIA LINES CROSS THE TIPPECANOE
(Half-tone, 150-line screen)



inches wide, so as to leave two and a quarter inches for text on a page, it is only necessary to slide the camera until the image in the box is two and a quarter inches wide. The result is invariably as desired.

Copy and lens are now in position to take a half-tone negative. This differs from an ordinary negative in that it must be composed of a series of dots and open spaces, the dots in the finished plate to supply the outline and details of the picture to the printed page, and the open spaces to furnish the fine gradations of light and shade.



STUDY HEAD

By A. Cox

(Half-tone, 100-line screen)

To produce these dots, what is known as a half-tone screen is inserted between the lens and the sensitive surface on which the picture is to be projected. The screen consists simply of two panes of glass finely ruled diagonally and cemented together, ruled side to ruled side, so that the ruled lines on one pane stand at right angles with the ruled lines on the other. The light passing from the copy through the lens to the sensitized plate is thus broken by the mesh of the screen. More light is reflected from the light portions of the copy than from the dark, with the result that in the image falling on the sensitized plate the dots are smaller and the open spaces correspondingly larger. From the dark portions of the copy no direct light is transmitted through the lens to the sensitized plate, and consequently there is an

utter absence of open spaces. The white portions of the copy, therefore, come out on the finished plate as an almost imperceptible gray, due to the exceedingly minute and scattered dots, and the black portions of the copy appear, as in the original, solid black. Between these two extremes every gradation of light and shade in the original is faithfully recorded in the half-tone negative, simply by the relative sizes of the multitude of dots in comparison with the open spaces.



PETITE V NISE, CR CY EN BRIE

By A. J. Fournier

(Half-tone, 60-line screen)

The coarseness of the screen used varies from sixty to two hundred and fifty lines to the inch, according to the fineness of the results desired. A sixty-line screen will make a plate that will print fairly well on ordinary newspaper stock; the finer the screen used the better the quality of paper required in the printing. The cuts made for BRUSH AND PENCIL are made with a screen of two hundred lines to the inch. Diaphragms, variously made and inserted in the tube of the lens, are used to modify the shape of the dots and produce different effects. A square-holed diaphragm produces a different result from that of a round-holed one, and so unique are the effects produced by these variations of shape that many photo-engravers noted for

the fineness of their work maintain the greatest secrecy as to the kind of diaphragm they use. The shape of the dots, and the consequent effect on the printed page, may also be modified by the use of certain intensifiers, some of which are likewise jealously guarded by expert photo-engravers, who are anxious to screen their particular methods.

Details of this sort may possibly seem dry reading, but they are

necessary for the correct understanding of the way in which the beautiful plates to-day seen in the higher-class publications are made. The agencies employed are essentially mysterious, and in photo-engraving, as in many another industrial art, some of the finest results are obtained simply by experiment, in which theory practically takes no part. The engraver finds that such and such means produce such and such effects; he may not be able to explain the whys and wherefores, but he is striving for effects, and the means are the all-important factor. It is the means only of which an outline is here given.

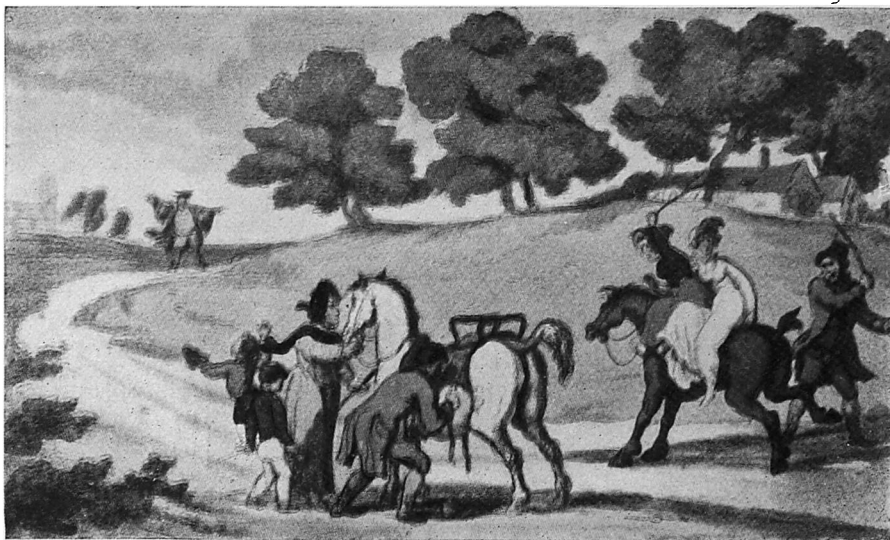


POVERTY

By S. L. Willard

(Half-tone from a manipulated gum bichromate print)

That portion of the half-tone plate-making thus far described is the most vital and important from the standpoint of the general reader. The rest is largely a matter of photography and mechanics. The engraver has already prepared his wet plate, which consists of a clean piece of glass, first albumenized, then covered with iodized collodion, and subsequently sensitized by immersion in a bath of silver nitrate. The plate is inserted in the camera and exposure begins, just as in an ordinary photographing, the length of exposure depending upon the intensity of the light and the character of the



THE VICAR'S FAMILY ON THE WAY TO CHURCH

By Thomas Rowlandson

(Half-tone direct from three-color print)



LE PARDON À KERGOAT

By Henry Wolf

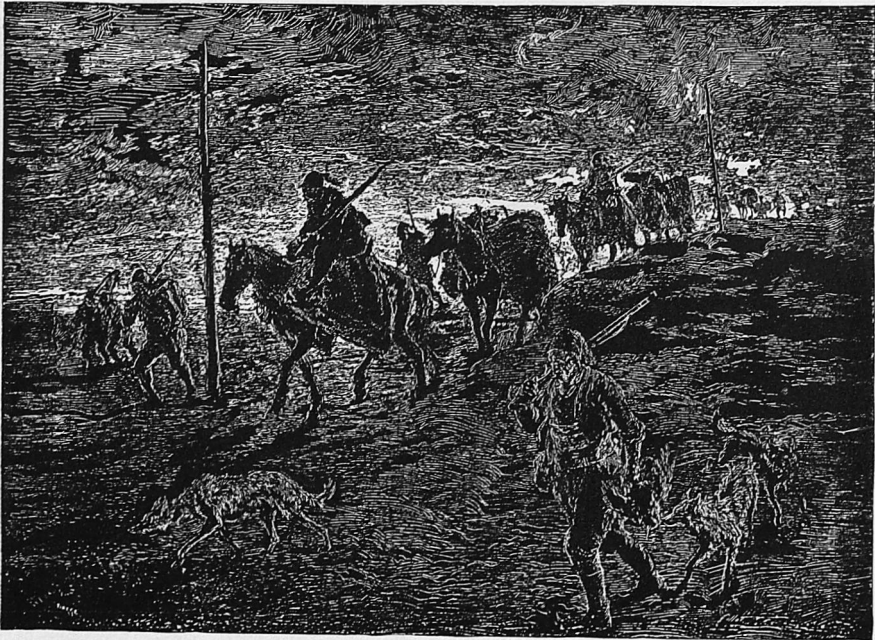
(Half-tone direct from wood-cut)



TRIPTYCH

By L. H. M. Frédéric

(Half-tone direct from half-tone)



BASHI-BAZOUKS RETURNING FROM A RAIDING EXPEDITION

By Daniel Vierge

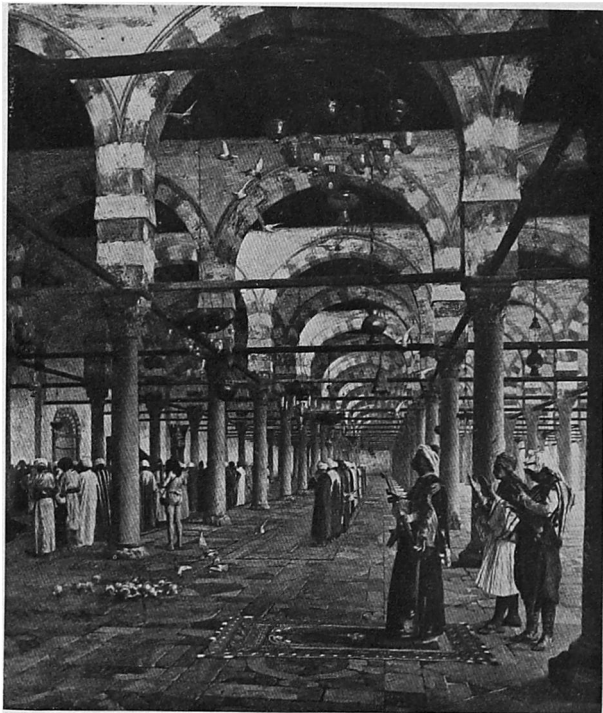
(Zinc etching direct from newspaper print)

photograph or print to be reproduced. The half-tone plate is subjected to the same developing as the negative in ordinary photography. Every care is taken to make the plate as perfect as possible, and the image is then fixed with a solution of potassium cyanide. The negative, when dry, is coated with rubber, so that the film may be stripped from the plate of glass, reversed and transferred to another thicker plate of glass, which is used in printing the picture on a highly polished sensitized plate of copper. Were the films not thus stripped and reversed, the right-hand side of the original would be the left-hand side of the finished plate.

A mere hint as to the rest of the process will suffice. The half-tone negative is simply printed on a prepared copper plate, just as the ordinary photographic negative is printed on prepared paper. The apparatus used for this is not essentially different

from the ordinary printing frame used in a photographic gallery, except that it is stronger, in order that greater pressure may be brought to bear upon the copper plate to get the closest possible contact with the negative. The image on the copper plate is developed by placing it under a jet of running water, and is then burned in over a gas-stove prior to being etched in a bath of chloride of iron.

Barring trimming and mounting, the half-tone plate is now finished. We have literally a photograph on copper, but a photograph of a peculiar character, of which the entire surface is a multitude of microscopic dots, with the intermediate open spaces etched away, so as to leave only the surface of the dots to touch the paper. A perfect



PRAYER IN A MOSQUE

By Jean Léon Gérôme

(Half-tone direct from photograph)



MR. BRYAN MAKING SPEECHES ON TIME

By John T. McCutcheon

(Zinc etching direct from pen-drawing)

half-tone plate is essentially as beautiful as the impression it makes. The rich copper-red of the darker portions stands out clearly against the duller background which is to produce the high lights of the picture.

Zinc-etching, by which line-engravings are reproduced, is a much simpler and more expeditious process. The engraving has its own "tooth," which, as a rule, is sharp and clearly defined. It is only necessary, therefore, to photograph the copy on sensitized zinc, and etch away those portions of the surface not covered by the design. The character of the prints and drawings reproduced by this process do not require the nicety of execution demanded in the best half-tone work to produce the most admirable effects on the printed page.

The possibilities of photo-engraving are almost limitless. A few years ago it would have been deemed impossible to transfer a photograph in which there was nothing more distinctive than a varying of tone or shading to a printed page. But this to-day is one of the commonplaces of the engraver's and printer's art. There is not a tone of a photograph so faint or uncertain as to elude the lens. It appears in its proper value in the reproduction. Reference to the illustrations accompanying this article will give some hint of what the photo-engravers can accomplish with oddly assorted material—the captions under the cuts tell their own story. Pencil-drawings, pen-and-ink sketches, odds and ends of various sorts, are reproduced as exact fac-similes of the originals, or are treated in such a way as literally to transform them and enhance their value as pictures. In the reproduction of pictures, it must not be forgotten that the printer is the ally and the best friend of the photo-engraver. A flat proof

lacks the beauty of an impression taken from a plate with what the printers call a proper "make-ready." A skillful printer can intensify or relieve the dark portions of a cut, heighten or depress the high lights, and thus add life and force to the picture, by a judicious application or removal of pressure from those portions of the plate he wishes to modify.

Great as are the achievements of half-tone engraving at the present time, there are engravers who think that the possibilities of photo-engraving have as yet been barely apprehended. A few years ago three-color work, which is but a modification of the half-tone process, was deemed an impossibility, and it is not unlikely that the near future will introduce novelties in black-and-white printing, due to improved methods of plate-making, no less remarkable.

One often hears laments over the decline of some of the old methods of reproduction, but the new methods have come almost as a response to a popular demand, and every lover of the beautiful to-day owes thanks to the photo-engraver. The methods just described, as followed by the Osgood Company, may be radically changed, but such modifications as may be introduced will certainly be on the line of the photo-engraver's art, and not of the hand-worker's.

WILLIAM C. WHITTAM.



BANKS OF THE VIENNE

By M. Carl-Rosa

(Zinc etching direct from etching)